Análisis de Datos Estadísticos
Prof. Pedro López-Roldán y Sandra Fachelli

Universitat Autònoma de Barcelona

Máster de Técnicas de Investigación Social Aplicada

Developing a Typology of Protection Challenges for Communities in the Area C of the West Bank

Julian Ibarguen[1]
[1] Student at Autonoma University of Barcelona – Master Degree in Techniques of Applied Social Research
Email: julenibarons@outlook.com

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Abstract: *The present paper describes the methodology followed to develop a typology of protection challenges, understood as threats and vulnerabilities, of communities in Area C of the West Bank. The developed typology served two main objectives: first, to structure the protection challenges in new conceptual entities of superior order with which to classify the communities of Area C, developing the typology; second, to use the developed typology as a base for a stratification for a regional survey. By applying Principal Component Analysis and Cluster Analysis the aimed typology was developed identifying five new types of protection challenges and clustering the communities among these. Each of the identified types represent different characteristics of the protection challenges found in the Area C of the West Bank.*

Keywords: Protection, Vulnerability Threats, Typology, Stratification, West Bank, Area C

1. Introduction

The West Bank region in the occupied Palestinian territories (oPt) is submerged in a chronic crisis which have last for more than 50 years. The humanitarian situation in the region have been defined by the Humanitarian Country Team[1] as a protracted protection crisis derived from the lack of compliance from the occupying power to respond and commit to the International Humanitarian Law (IHL) and the International Human Rights Law (IHRL) (United Nations Office for the Coordination of Humanitarian Affairs - UNOCHA, 2016).

Chronic humanitarian needs in the sectors of food security and livelihood, water sanitation and hygiene (WASH), education, health, protection and more[2] are derived from the coercive environment designed to forcible transfer the Palestinian population.

This coercive environment manifest in movement and access restriction, exploitation and endangerment of natural resources, destruction and confiscation of civilian land and property, settlement expansion and settler related violence all of which have a negative impact on the socioeconomic conditions in the occupied Palestinian Territories (United Nations, 2017).

These factors are more evident in the defined Area C by the Oslo Interim Agreement signed in 1995, also known as Oslo II. Through this agreements the West Bank region was divided in three areas for a five year transitional period: Area A where the civil and military administration were competence of the Palestinian Authority; Area B which civil administration fall with the Palestinian Authority and the military with the Israeli authorities: and Area C where either the civil and the military administration fall in the competence of the Israeli authorities.

In this context a number of humanitarian actors in the West Bank collects and processes information using different methodologies, geographical disaggregation and thematic classifications. The current practices make it very challenging to comprehensibility describe the humanitarian situation and needs of the population and, furthermore, make it complicated to conduct inter-sectoral analysis, which would allow a deeper understanding on this complex and multidimensional situation.

A proposed West Bank Multi-Sectoral Household Survey, aims to tackle this issue by becoming the first layer source of information providing harmonized and statistically reliable information overtime in an efficient way.

For the sample design of this survey it have been proposed a stratification of the region based on a typology of protection challenges in the West Bank. This stratification will not only allow an efficient sample design for surveys aiming at exploring the vulnerabilities in the West Bank, yet the process of developing the stratification will constitute, it self, an analysis of the protection vulnerabilities.

Al in all, the present paper is structured in three main chapters: Methodology, where the theoretical background and the process of analysis for developing the typology of protection challenges is explained and justified; Results, were the proposed methodology is applied and the typology constructed and interpreted; and Conclusions were advantages and limitations of the proposed methodology are exposed.

[1] The Humanitarian Country Team was stablished in oPt in 2008, formed by different actors involved in the provision of humanitarian assistance in the country.

[2] For more information on sectors of humanitarian actions and the cluster approach refer to Steets et al. (2010).

2. Methodology

2.1 Theoretical framework: the concept of protection challenges

It is not the purpose of the present paper to offer a synthesis-definition of such a broad and multi-defined concept as is Protection in the context of humanitarian action. Instead we will limit ourselves to point the key elements that underlay in the concept to offer a brief theoretical framework with which the developed analysis, real purpose of the paper, can be interpreted

Therefore, we refer to the definition of Protection developed by the European Commission (EC) as activities aiming at *"address violence, coercion, deliberate deprivation and abuse for persons, groups and communities in the context of humanitarian crises, in compliance with the humanitarian principles of humanity, neutrality, impartiality and independence and within the framework of IHRL, IHL and Refugee Law"* (2016, p.6).

People suffering violence, coercion, deliberate deprivation or abuse, violating their human rights, are affected by emerging needs which impact negatively in their safety, dignity and integrity. In this context, protection needs arise from violations of the IHL/IHRL, where victims are unable to defend their basic interest and duty bearers no longer respect their rights or neglect them (International Committee of the Red Cross, 2008, EC, 2016).

These protection needs can appear in different humanitarian contexts: from natural disasters to armed conflicts, including protracted conflicts where, despite the lack of official armed conflict, it exist political oppression leading into IHL and/or IHRL violations (Slim & Bonewick, 2005).

Protection needs can be interpreted as risks, which are defined as an interrelation of the threats and vulnerabilities people are experiencing and the capacities they have to overcome them formulating the famous risk equation shown in the EQ 1[3] (Slim & Bonewick, 2005; Eguren & Caraj, 2009).

$$Risk = \frac{Threat \cdot Vulnerability}{Capacity} \qquad \text{(EQ 1)}$$

In this risk equation, vulnerabilities are understood as circumstances or discriminatory practices reducing the ability of persons, households or communities to withstand the impact of external stressors; while threats are defined as actual or potential actions committed against the affected population which have a negative impact in their safety, dignity and integrity (European Commission, 2016)

In the frame of this paper when we refer to protection challenges, we are referring to the enumerator of the risk equation: to threats and vulnerabilities which have emerged from the violation of IHL and IHRL, which have a negative impact on the safety, dignity and integrity of the victim and reduce their ability to cope with the situation increasing the risk of protection needs.

2.2 Protection challenges in Palestinian communities in the West Bank-Area C

Area C in the West Bank comprises at around 61% of the total area of the West Bank, comprising at around 532 Palestinian communities which fall under territory under control of Israeli authorities: civil and military (UNOCHA, 2011). Was in this territory were generally the more severe protection challenges could be found, and specifically in Bedouin and herder communities (UNOCHA, 2011).

As pointed by a qualitative study carry out by Eguiguren & Saadeh (2014) the main root cause of all protection challenges faced by the Palestinian population is the Israeli occupation. More specifically, some of the protection challenges identified were: water and electricity shortages, poor infrastructure, lack of health and education facilities and services, house demolitions and land confiscation, settler threats and insecurity, lack of transportation and restricted movement, contamination of water resources, decrease in agricultural and fodder products, and unemployment (Eguiguren & Saadeh, 2014) all of which stemmed from the Israeli occupation of the West Bank..

These protection challenges, are strongly interrelated (Eguiguren & Saadeh, 2014) forming what have been called the coercive environment, aiming at the forcible transfer of the Palestinian population. At the same time, this protection challenges vary not only among regional areas, yet also from one community to another, revealing a high degree of heterogeneity in the geographical distribution of the protection challenges (Eguiguren & Saadeh, 2014).

2.3 Research hypothesis

Given the lack of literature about types of protection challenges, and more specifically for the context of oPt, the analysis was proposed on exploratory terms. Therefore, the drafted hypothesis were not aimed at being proven right or wrong, but to guide the analysis and asses the plausibility of the results. The following hypothesis were drawn from the theoretical framework:

- Underlying protection challenges of superior order emerged from the interrelation of the different protection challenges faced by communities in the West Bank-Area C.
- The underlying protection challenges allowed to structure a dimensional space within which to classify the communities in the West Bank-Area C.
- Due to the heterogeneity and interrelation of protection challenges in the West Bank-Area C, it is expected to find more types in the typology than emerged protection challenges of superior order.
- The geographical distribution of this typology reflects the heterogeneity of the protection challenges across the West Bank-Area C.
- Bedouin and herder communities are the most affected by protection challenges

2.4 Analysis framework

The methodological process that we follow in the present paper was defined by Lopez-Roldan (1996) as «structural and articulated typology». This method comprises 3 main steps: first the identification of new concepts of superior order based on original pre-defined concepts with which structure a new dimensional space; second, a classification of the unit of analysis based on the newly developed dimensional space to form the typology; third, the definition and validation of the formed typology (Lopez-Roldan, 1996).

To conduct this methodological approach we used data from the Vulnerability Profile Project (VPP) of Palestinian communities in Area C[4] gathered between June and September 2013, through structured interviews to administrative and traditional

[3] This risk equation was developed as an interpretation tool in the frame of Disaster Risk Reduction interventions and further adopted for protection interventions. For more detail see Wisner, et al. (2003).

[4] The VPP targeted those communities which have any part of their residential area in Area C, and its data refers only to those residents residing within this area (UNOCHA, n.d.)

local authorities of 531 communities and reported at community level.

The structure of the VPP[5] was developed as a reflection of the theoretical understanding of the protection challenges in Area C and grouped to resemble the sectors of humanitarian action. A total of 8 indexes normalized in a scale 0 to 100 were calculated: Access to land, Agriculture, Education, Health, Protection, Settler Violence, Shelter and WASH. This indexes constituted the original variables for the analysis, comprising the different protection challenges identified in Areac Cin the West Bank.

The VPP comprises the initial theoretical concepts from which new conceptual entities of superior order were stemmed. For identifying the new emerging concepts, we used the Principal Component Analysis (PCA) with Varimax rotation, to optimize the distribution of the explained variance. This way, it was possible to identify underlying dimensions in the structure of the data and develop a new dimensional space formed by the new conceptual entities represented by the factors from the PCA (Lopez-Roldán & Fachelli, 2016).

Once the factors were identified and the new dimensional space was developed, they served as the classification criteria to classify each community and form the protection challenges typology. A cluster analysis process was follow to perform the classification and identify the different types of protection challenges which formed the typology.

The first step involved identifying the adequate number of clusters to be generated. For this purpose we applied agglomerative hierarchical clustering by Ward's method. Ward's method positioned as the most convenient for two main reasons: 1) first, it helps to identify the number of clusters which offer the minimum dispersion within cluster; 2) second, by using the same referent space to form the clusters as the PCA (i.e. Euclidean space) it was adequate to operate with factors derived from a PCA analysis (Lopez-Roldan & Fachelli, 2016; Murtagh & Legendre, 2014).

Based on the results obtained from Ward's method, the first three numbers of cluster which offer the least loss of variance between groups were chosen by calculating the coefficient's second differences. Once it was determined the three most adequate numbers of cluster, the classification was performed by applying Ward's and K-Means method.

The decision to perform the cluster analysis with a second method was informed by Lopez-Roldan & Fachelli, 2016; Murtagh & Legendre, 2014; Jiangsheng, 2007 all of whom recommend or used the K-Means to optimize the clustering of units and reduce within variance in the classification.

Nevertheless, by introducing a second classification method, we were able to assess the fitness of each one for each pre-identified number of clusters through the Cluster Silhouettes proposed by Rousseeuw (1986). Therefore, the method and the number of clusters which offered the highest average of the silhouette coefficient was considered as the most adequate among the different options.

In a second level of validation, once the classification was performed through the chosen method and number of clusters, the silhouette coefficients were observed at unit level: for those cases which had a negative coefficient values of the types and original variables were examined and compared to the average of the respective cluster deciding case by case whether if it should remained on the assigned cluster or needed to be reassigned.

Through this validation method, it was developed an iterative process between the results from the analysis of empirical data and the theory behind its interpretation. This iteration helped to articulate the theory and the empiric aligning with the principles of the «structural and articulated typology».

3. Results

3.1 Identifying types of protection challenges

As a result of applying the PCA with the eight original variables of the VPP, three factors were observed, each one representing a new conceptual entity of superior order than the original variables as shown in Table 1.

Among the original variables, the ones which contributed more to define the emerging factors were WASH, Health, Access to Land and Agriculture with communalities over 0.7. The three derived factors maintained 69.4% of the variance explained, being the first one who kept the greatest percentage of variance explained (28.8%).

Table 1. Component Matrix[a]

Original variables	Component			Communalities
	1	2	3	
Access to Land	**0.846**	-0.037	-0.039	0.719
Settler Violence	**0.786**	0.016	0.026	0.618
Physical Protection	**0.776**	0.209	0.109	0.658
WASH	-0.058	**0.892**	0.136	0.817
Shelter	0.132	**0.695**	0.290	0.585
Agriculture	**0.576**	**0.601**	0.146	0.715
Health	-0.033	0.118	**0.885**	0.798
Education	0.123	0.307	**0.731**	0.643
Explained Variance (%)	28.817	22.428	18.189	69.434[b]

a. Rotation method Varimax with Kaiser Normalization converged in 4 iterations.
b. Total variance explained

The definition of the factors was based on the original variables that were contributing to its formation as shown in Figure 1. Therefore:

The first one was mainly defined by the original variables of Access to Land, Settler Violence, and Physical Protection. These variables refer mainly to the elements of the coercive environment displayed by the occupying power; therefore we called this new conceptual entity represented by the factor as Coercive Measures.

The second one was mainly defined by WASH, Shelter and Agriculture. As they refer to basic elements of access to water, livelihood and shelter status, we called this new emerging concept as Living Conditions.

Finally, the third factor was mainly formed by Health and Education. These social rights are key for social growth and development, thus we decided to call this new concept as such.

We should refer here that the contribution of Agriculture was

[5] The operationalization framework of the VPP can be found in Annex A.

equally divided between the first and the second factor. This was reflecting the inter-correlation that this original variable had with Access to Land and Settler Violence. This inter-correlation has its origin in the inclusion of a Access to Land sub-score and in an specific indicator referred to settler violence for the calculation of the Agricultural index. In a later stage, once defined the typology we were able to observe, decompose and interpreted the contribution of Agriculture in the development of the typology.

These identified new concepts, these emerged protection challenges of superior order, became the criteria to develop a new dimensional space reflection of the protection challenges of the Area C in the West Bank.

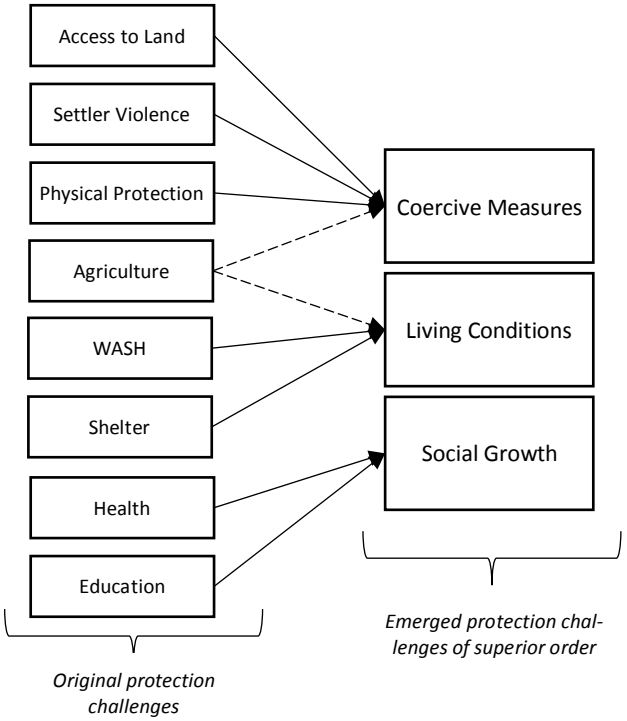

Figure 1. Composition of the new emerged protection challenges of superior order

3.2 Development of a typology of Protection challenges for Area C communities

By applying Ward's method with the three new conceptual entities identified with the PCA and calculating coefficient's second differences it was identified that the number of clusters which offered the least loss of between variance where two, three and five.

Given these numbers of clusters, we performed the classification using Ward and K-Means methods for each number of cluster and compare the cluster silhouette to evaluate the fitness of each method and number of clusters.

As shown in Table 2, the better fitness corresponded to K-Means method with five clusters, followed by K-Means with three clusters.

[6] The hypothesis testing of the specific indicators of Agriculture original variable contributing to define Cluster 1 and Cluster 3 can be found in Annex E.

Table 2: Cluster silhouettes for different clustering methods and number of clusters

Clustering method	No. of clusters	Silhouette		
		Mean	Minimum	Maximum
Ward	2	0.243	-0.277	0.461
	3	0.234	-0.283	0.498
	5	0.241	-0.366	0.628
K-Means	2	0.227	-0.730	0.451
	3	0.282	-0.030	0.544
	5	0.283	-0.105	0.620

After comparing the means of the new conceptual entities and the original ones for each of the two best fitted options, the K-Means method with 5 clusters offered the best classification of communities in the West Bank.

In a second step, those cases which presented a negative silhouette coefficient (n=25) were observed case by case. Case values of the new and original concepts were compared to those of the total average and to the average of each cluster to assess if the case would fit better in another cluster. After this case by case review, a total of eight cases were reassigned from their original cluster. The average silhouette coefficient for the total of the clusters after case by case review remained the same (0.283).

As a result of this classification process, five differentiated clusters of communities were identified, each of them reflecting different characteristics of the protection challenges and forming the types of the protection challenges typology, as shown in Table 3 and Figure 2.

The first type comprised 19.8% of the communities (5.3% of the Bedouin/herder), it reflects those communities whose protection challenges are mainly related to the Coercive Measures challenges, in particular due to Access to Land, Physical Protection and Settler Violence. The elements of the Agricultural variable which characterize this cluster were mainly referred to Access to Land and Settler Violence indicators, in particular: Settler violence affecting agricultural livelihoods, Decrease in amount of cultivated lands and Access to land score (re-scaled 0-20)[6]. All in all, communities comprised in this type were **Communities highly affected by Coercive Measures challenges**.

The second type, which comprised 24.1% of the communities (9.6% of the Bedouin/herder), referred to communities which were mildly affected by protection challenges from any of the types. Therefore, this one represented **Communities mildly affected by protection challenges**.

The third type was comprised by 17.9% of the communities (30.7% of the Bedouin/herder). These communities shown high impact from Living Conditions challenges. The elements of Agricultural factors which characterized this cluster where mainly referring to livelihood elements, such as: Farming or herding livelihood, Cost of water tank and Fodder price increase. Accordingly, these were **Communities highly affected by Living Conditions challenges.**

The forth type was comprised by 15.4% of the communities

(22.8% of the Bedouin/herder) and presented high impact from all protection challenges. Consequently this cluster comprised **Communities highly affected by protection challenges.**

Finally, the fifth type composed by 22.8% of the communities (31.6% of the Bedouin/herder) referred to communities which shown high impact from Social Growth challenges, thus **Communities highly affected by Social Growth challenges.**

Table 3. Average values for types by cluster and total after case by case review

Typology		Cluster Number					Total[a]
		1	2	3	4	5	
New protection challenges	Coercive measures	**1.237**	-0.604	-0.604	**0.737**	-0.460	0.000
	Living conditions	-0.582	-0.768	**1.083**	**1.175**	-0.329	0.000
	Social growth & development	-0.482	-0.617	-0.684	**0.640**	**1.173**	0.000
Original protection challenges	Access to Land	**51.52**	19.49	19.95	**39.33**	21.69	29.47
	Agriculture	**43.24**	19.05	**40.93**	**55.68**	32.29	36.42
	Education	20.62	15.76	23.54	**45.63**	**40.44**	28.35
	Health	21.59	15.34	22.98	**52.72**	**63.01**	34.58
	Shelter	25.11	20.41	**48.19**	**64.49**	37.79	37.08
	Protection	**50.36**	28.11	31.99	**56.70**	33.07	38.75
	Settler violence	**47.57**	6.33	7.53	**37.99**	10.58	20.56
	WASH	9.75	4.75	**47.03**	**52.77**	22.08	24.67
	Total vulnerability[b]	**37.15**	17.78	27.87	**50.36**	**34.12**	32.17
Case count		105	128	95	82	121	531

a. Average of original variables

These identified types from their classification based on the previously identified protection challenges conformed the typology of protection challenges for communities in Area C of the West Bank.

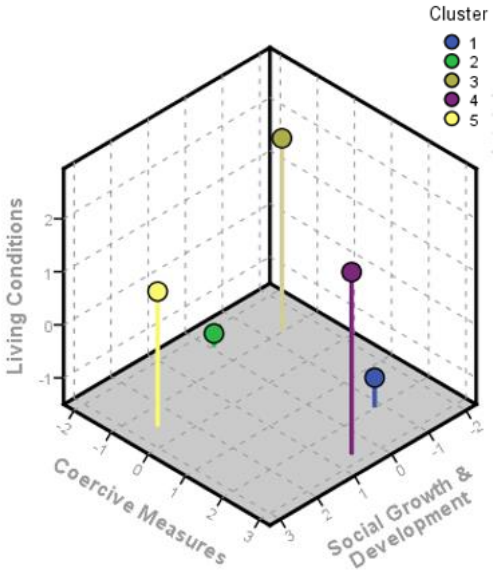

Figure 2. Cluster centers in the dimensional space of the protection challenges types

4. Conclusions

The methodological process applied in the present paper allowed not only to design a typology of protection challenges for communities in the West Bank-Area C, which could be used for stratification purposes in the frame of a regional survey, yet itself constituted an analysis and structuration of the reality of the West Bank in terms of protection challenges.

From this analysis, we have seen that underlying protection challenges of superior order emerged from the combination of threats and vulnerabilities as grouped by the VPP. These protection challenges constituted superior conceptual entities serving to identify different types of protection challenges for the development of a typology.

Based on these protection challenges, it was possible to structure a dimensional space in which the communities in Area C were classified, forming clusters of communities which faced similar protection challenges, defining the types of protection challenges.

The geographical distribution of the identified types was heterogenic as shown in Annex X, as a reflection of the reality of the West Bank, where the same threats and vulnerabilities were found across the territory.

At the same time, Bedouin and herder communities, shown more frequent in the type highly affected by at least one of the protection challenges, showing the high incidence they have in this communities.

The resulting typology served to stratify the Area C of the West Bank as a reflection of the reality of the protection challenges. The strata that could be derived from the clustering of communities among the different types could be further apply to the stratification of a survey design aiming at exploring and further analyzing protection challenges in the West Bank. This way a more efficient sample design could be developed by reducing the within variance of the strata; each of them would constitute an autonomous unit of analysis.

The developed procedure applied in the present paper could be further applied to superior administrative entities different from the communities, as for example census areas, by averaging the values of all communities comprised by the superior administrative unit.

This way, typologies at different administrative level could be developed for the better understanding on how the protection challenges are distributed in the geographical space and exploring if the combination of the protection challenges on a series of communities formed new types.

Finally, would have been interesting to perform similar analysis including Areas A and B of the West Bank to obtain a full picture of the West Bank region. At the same time, it would have been interesting to structure the VPP by differencing between threat and vulnerabilities, thus being able to differentiate types for the two elements of the risk equation.

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5. Annexes

Annex A: Vulnerability Profile Project operationalization framework:

- **Figure 3.** Operationalization of the Vulnerability Profile Project

Annex B: Additional Principal Components Analysis results:

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- **Figure 4.** PCA Scree plot
- **Figure 4.** Original variables in the rotated factorial space

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Annex D: Geographical and dimensional distribution of communities by cluster

- **Figure 6.** Communities in the protection challenges types dimensional space by clusters
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Annex E: Hypothesis testing for Agriculture original variable contribution to cluster 1 and cluster 3.

- **Table 9.** Differences between Cluster 1 and Cluster 3 for Agricultural original variable indicators

ANNEXES

Annex A: Vulnerability Profile Project operationalization framework

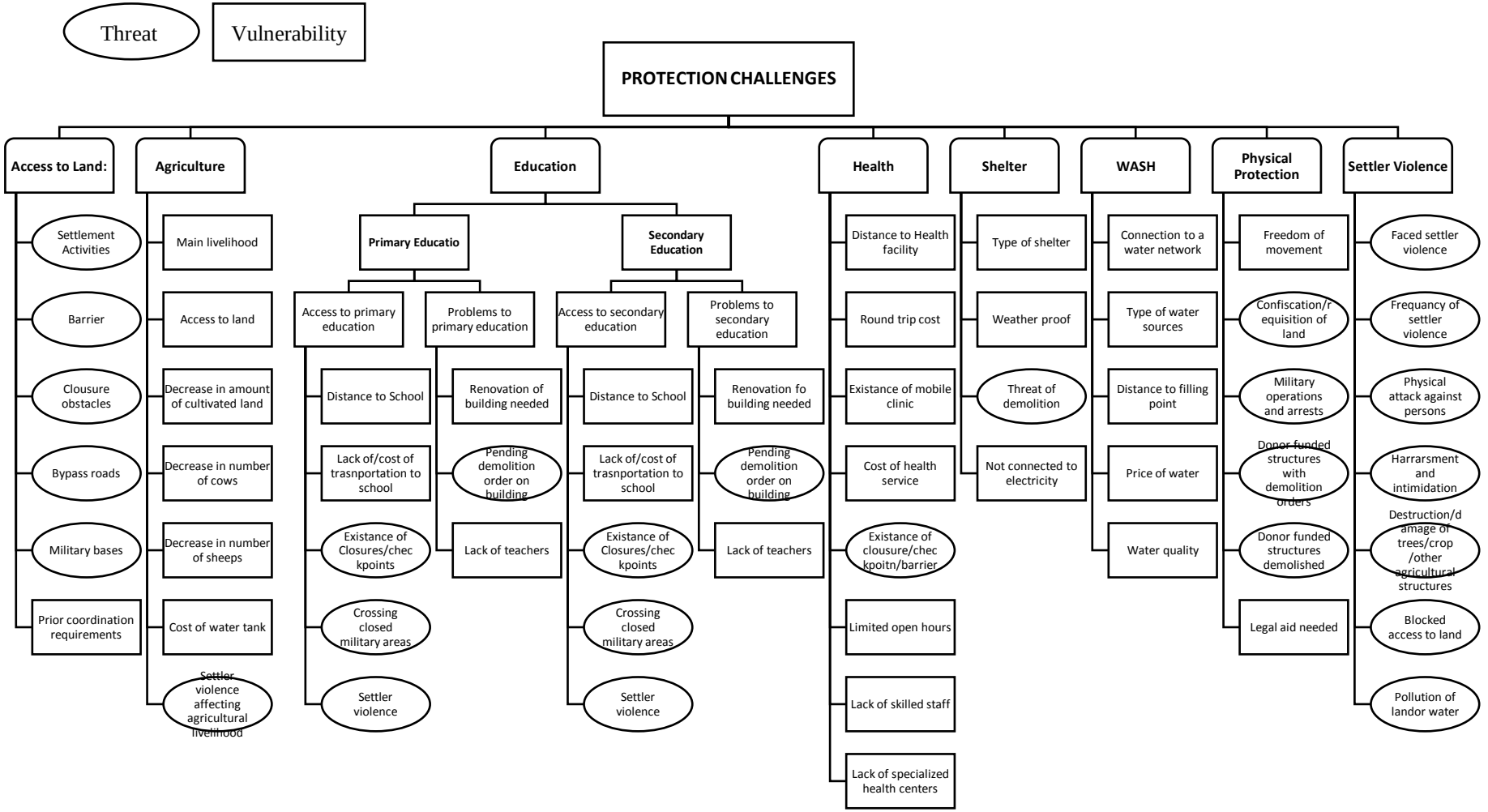

Figure 8. Operationalization of the Vulnerability Profile Project

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Annex B: Additional Principal Components Analysis results

Table 4. PCA evaluation coefficients

Test		*Value*
R Determinant		0.860
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.697
Bartlett's Test of Sphericity	Approx. Chi-Square	1289.00
	df	28
	Sig.	0.000
Measures of Sampling Adequacy	Access to Land	0.620
	Agriculture	0.691
	Health	0.749
	Shelter	0.705
	Physical Protection	0.689
	Settler Violence	0.755
	WASH	0.647
	Education	0.789

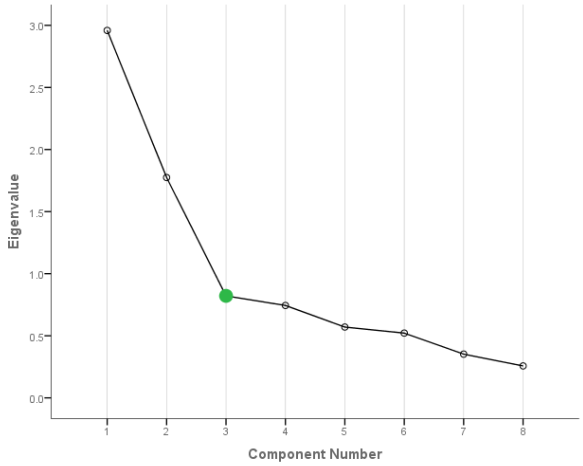

Figure 9: PCA Scree plot

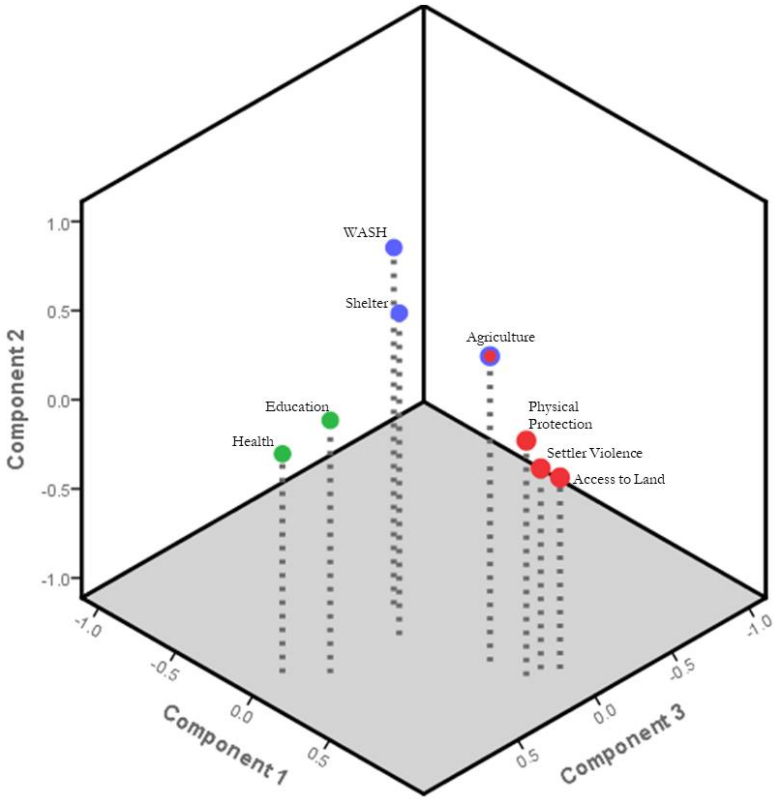

Figure 10: Original variables in the rotated factorial space

Annex C: Additional Classification analysis results and validation procedure

Table 5. Agglomeration schedule for West Bank communities

Stageb	No. of Cluster	Cluster Combined		Coefficient	Stage Cluster First Appear		Next Stage
		Cluster 1	Cluster 2		Cluster 1	Cluster 2	
516	15	1	32	290.921	484	508	521
517	14	15	20	306.161	490	503	523
518	13	47	52	321.559	482	506	524
519	12	5	36	339.949	509	514	525
520	11	2	4	361.015	500	510	528
521	10	1	6	391.014	516	504	524
522	9	17	19	431.871	494	515	528
523	8	14	15	473.512	512	517	526
524	7	1	47	529.838	521	518	527
525	6	5	56	590.643	519	513	527
526	5	3	14	671.143	511	523	529
527	4	1	5	820.575	524	525	530
528	3	2	17	981.049	520	522	529
529	2	2	3	1201.606	528	526	530
530	1	1	2	1590.000	527	529	0

a. Ward method with squared Euclidean distance
b. Last 15 stages

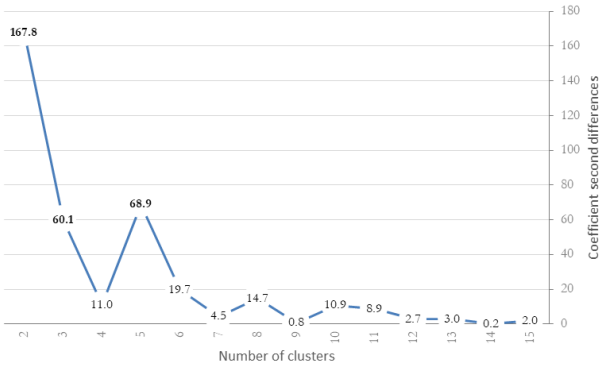

Figure 11. Agglomeration coefficients second measures

Table 6. Silhouette Statistics before case by case review

Cluster No.	Case Count	Mean	Minimum	Maximum
1	107	0.222	-0.105	0.493
2	125	0.393	0.081	0.620
3	93	0.286	-0.074	0.537
4	80	0.270	-0.005	0.507
5	126	0.232	-0.072	0.501
Total	531	0.283	-0.105	0.620

Table 7. Silhouette Statistics after case by case review

Cluster No.	Case Count	Mean	Minimum	Maximum
1	105	0.230	-0.098	0.498
2	128	0.379	0.026	0.611
3	95	0.284	-0.057	0.537
4	82	0.259	-0.012	0.501
5	121	0.244	-0.058	0.505
Total	531	0.283	-0.098	0.611

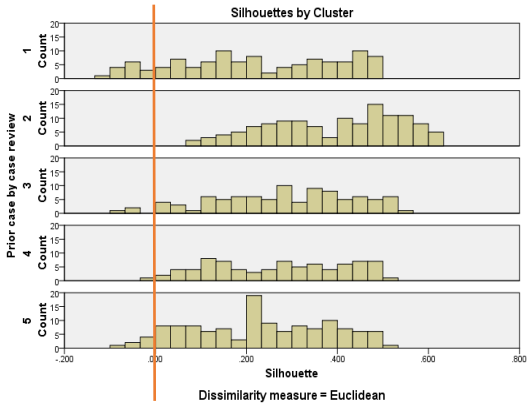

Figure 12. Silhouettes histogram by cluster before case by case review

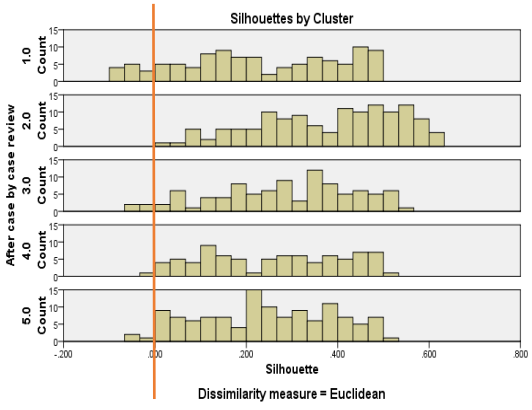

Figure 13: Silhouettes histogram by cluster after case by case review

ANNEXES

Table 8. Case by case review of cluster assignment based on individual silhouette coefficients

Case ID	Assigned Cluster	Silhouette Coefficient	Next Best Cluster	Types			Original Variables									Final Cluster
				Coercive Measures	Living Conditions	Social Growth & Development	Access to Land	Protection	Settler Violence	Agriculture	Shelter	WASH	Education	Health	Total Vulnerability	
452170	1	-0.105	2	**0.243**	**0.069**	-0.377	**45**	**50**	0	**40**	24	**32**	20	33	30.5	**1**
301495	1	-0.096	2	**0.398**	-1.083	-0.547	**50**	**53**	0	21	24	0	0	33	22.6	**1**
301590	1	-0.087	2	**0.426**	-1.515	-0.987	**40**	22	**55**	18	0	0	6	10	18.9	**1**
301595	1	-0.079	2	**0.420**	-0.990	-0.987	**40**	**46**	**25**	18	24	0	6	10	21.1	**1**
999794	3	-0.074	2	-0.314	**0.175**	-0.598	15	**53**	0	25	**76**	0	14	17	25.0	**3**
401940	5	-0.072	2	-1.083	-1.470	**0.566**	10	21	0	10	0	3	**34**	**37**	14.4	**2**
452520	1	-0.072	2	**0.317**	-0.898	**0.344**	30	23	**50**	**40**	24	3	**29**	**40**	29.9	**5**
999910	1	-0.064	2	**0.395**	-0.478	-0.628	35	**43**	20	**38**	33	0	23	10	25.3	**1**
201130	5	-0.059	2	**0.072**	-1.349	**0.470**	**50**	25	0	34	0	0	**43**	30	22.8	**5**
301890	1	-0.048	2	**0.450**	-0.945	-0.984	**40**	**55**	15	18	24	0	6	10	21.0	**1**
10145	1	-0.047	2	**0.434**	-0.660	-1.102	**50**	**46**	0	34	24	0	6	10	21.3	**1**
452210	1	-0.047	2	**0.370**	-0.119	-0.920	**65**	**40**	0	32	24	**32**	6	27	28.3	**1**
401915	1	-0.044	2	**0.446**	-0.827	-0.876	**60**	38	0	30	24	0	14	10	22.0	**1**
502640	3	-0.035	2	-0.105	**0.220**	-0.421	**40**	**40**	0	**38**	24	**38**	20	33	29.1	**3**
10065	5	-0.034	2	-1.681	-0.516	**0.418**	0	8	0	16	0	**35**	**34**	**43**	17.0	**2**
999887	3	-0.034	2	-0.180	**0.204**	-0.820	25	**48**	0	27	**76**	0	14	10	25.0	**3**
301680	1	-0.033	2	**0.361**	**0.047**	-0.903	15	38	**60**	**42**	24	24	20	10	29.1	**1**
251355	1	-0.03	2	**0.454**	-0.973	-0.297	30	**44**	**40**	22	24	0	**34**	7	25.1	**1**
999837	5	-0.03	2	-0.807	**0.163**	**0.184**	15	36	0	25	**57**	24	14	**53**	28.0	**3**
301660	1	-0.028	2	**0.484**	-1.094	-1.076	20	**48**	**60**	12	24	0	0	10	21.8	**1**
401955	1	-0.021	2	**0.503**	-1.174	-1.281	**65**	33	0	32	0	0	0	10	17.5	**2**
999993	5	-0.019	4	-0.147	**0.990**	**1.780**	25	**43**	20	**47**	**76**	**47**	**63**	**73**	**49.3**	**4**
452415	5	-0.015	4	**1.005**	**0.001**	**1.657**	20	**62**	**70**	**44**	**67**	18	**63**	**57**	**50.1**	**4**
502625	4	-0.005	3	**1.192**	**1.437**	-1.172	**70**	**48**	**35**	**55**	**76**	**47**	20	13	**45.5**	**4**
100780	5	-0.004	3	-1.004	**0.356**	**0.259**	5	33	0	32	24	**41**	**43**	33	26.4	**3**

ANNEXES

Annex D: Geographical and dimensional distribution of communities by cluster

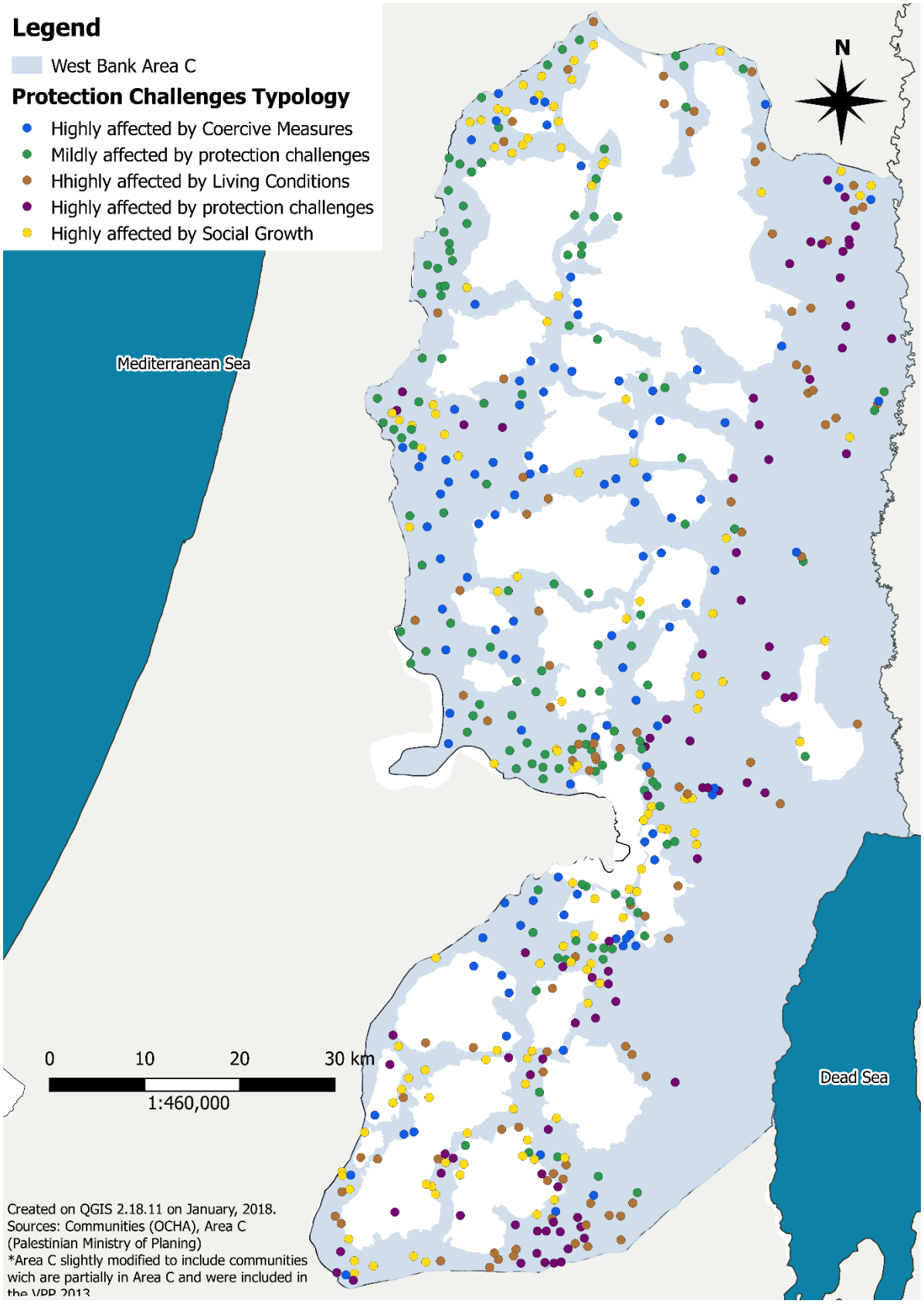

Figure 14: Figure 15. Geographical distribution of communities by cluster

ANEXO

Annex E: Hypothesis testing for Agriculture original variable contribution to cluster 1 and cluster 3.

Table 9. Differences between Cluster 1 and Cluster 3 for Agricultural original variable indicators

Variable	Category	Statistics	Clusters		Significance Level[a]
			Cluster 1	Cluster 3	
Agriculture: Settler violence affecting agricultural livelihoods?	Not affected	Row N %	38.5%	61.5%	
		Adjusted Residual	-4.6	4.6	***
	Less than monthly frequency	Row N %	63.6%	36.4%	
		Adjusted Residual	1.1	-1.1	
	More than monthly frequency	Row N %	74.2%	25.8%	
		Adjusted Residual	4.2	-4.2	***
Agri.: Access to land score (re-scaled 0-20)		Mean[b]	10.3	3.99	***
Agri.: Decrease in amount of cultivated lands? (2000-2013)	No	Row N %	34.8%	65.2%	
		Adjusted Residual	-4.6	4.6	***
	Yes	Row N %	67.0%	33.0%	
		Adjusted Residual	4.6	-4.6	***
Agri: Farming or herding livelihood?	Other than Farming or Herding	Row N %	83.7%	16.3%	
		Adjusted Residual	4.7	-4.7	***
	Farming/Herding as secondary	Row N %	76.3%	23.7%	
		Adjusted Residual	3.3	-3.3	***
	Farming/Herding as primary	Row N %	33.3%	66.7%	
		Adjusted Residual	-6.5	6.5	***
Agri.: Decrease in number of cows? (2000-2013)	No	Row N %	48.4%	51.6%	
		Adjusted Residual	-2.1	2.1	**
	Yes	Row N %	65.9%	34.1%	
		Adjusted Residual	2.1	-2.1	**
Agri: Cost of water tank? (NIS / m3)	No Water Tank	Row N %	90.6%	9.4%	
		Adjusted Residual	6.5	-6.5	***
	> 0 NIS	Row N %	48.2%	51.8%	
		Adjusted Residual	-0.7	0.7	
	>=20 & <40 NIS	Row N %	36.1%	63.9%	
		Adjusted Residual	-3.4	3.4	***
	>= 40 NIS	Row N %	20.0%	80.0%	
		Adjusted Residual	-3	3	***
Agri.: Decrease in number of sheep? (2000-2013)	No	Row N %	61.1%	38.9%	
		Adjusted Residual	1.5	-1.5	
	Yes	Row N %	49.0%	51.0%	
		Adjusted Residual	-1.5	1.5	
Fodder price increase?	No	Row N %	56.3%	43.8%	
		Adjusted Residual	2.2	-2.2	**
	Yes	Row N %	36.6%	63.4%	
		Adjusted Residual	-2.2	2.2	**
Asking for fodder distribution?	No	Row N %	54.6%	45.4%	
		Adjusted Residual	1.4	-1.4	
	Yes	Row N %	42.1%	57.9%	
		Adjusted Residual	-1.4	1.4	

a. ** Significant at 95%; *** Significant at 99%.

b. T-Test for hypothesis testing.